

# USING WOOD AND COAL FOR HOME HEATING



environmental  
protection uk

working for a cleaner, quieter, healthier world



Since 1898

## Solid Fuel Heating

Solid fuel can be a cost effective way of heating your home and providing hot water, particularly in rural areas where mains gas is not available. In recent years interest has grown in biomass heating (wood burning) as an environmentally friendly way of heating homes.

## Types of Solid Fuel

Solid fuels fall into two categories – minerals and biomass. Mineral fuels include bituminous coal, natural smokeless fuel (anthracite and dry steam coal), manufactured smokeless fuel and manufactured non-smokeless fuel. The most common biomass fuel used is wood. Wood is available in many forms including logs, manufactured logs (usually a mixture of wood and wax), chips and pellets.

Other mineral and biomass fuels exist, however you should not use these unless you have clear instructions that these can be used in your solid fuel appliance without creating excess pollution and, if you live in a smoke control area, that the fuel has been authorised for use in such areas. Mineral fuels in this category include petroleum coke, whilst biomass fuels are many and varied, for example agricultural and animal wastes.

Burning waste in a solid fuel appliance can produce very high emissions of pollutants, potentially affecting the health of your own household and that of your neighbours. This includes waste wood; wood is often treated and burning this can release highly toxic chemicals (including heavy metals) into the air.

## Solid Fuel Appliances

The simplest type of solid fuel appliance is an open fire, however these are not very energy efficient. Closed appliances, such as room heaters and wood burning stoves, are much more efficient. Solid fuel can also be used in cookers, and in more complex systems such as gravity fed boilers that can provide heating and hot water for an entire house.

## Environmental Impact

85% of UK households use natural gas for home heating, making it a useful benchmark for environmental impact. Using coal and other mineral solid fuels for home heating will usually result in higher emissions of both local air pollutants (such as particles and sulphur dioxide) and carbon dioxide (the greenhouse gas) than an equivalent natural gas fired system, and therefore coal fired heating will normally have a higher environmental impact than gas.

With wood fuel the picture is not so clear. Wood is often described as a 'carbon neutral' fuel, as the emissions of carbon dioxide emitted into the atmosphere when the wood is burned are matched by the amount of carbon dioxide the wood absorbed when it was growing. There are, however, emissions of carbon dioxide associated with forestry practices, transport and the manufacture of wood fuels. On balance though wood fuels will generally have lower 'lifecycle' emissions of carbon dioxide than natural gas.

Emissions of local air pollution from a modern wood fuelled appliance are, however, usually higher than those of an equivalent gas fired appliance. The environmentally friendly choice therefore really depends upon where you live. If you live in a rural area where the air is relatively clean a wood fuelled system may be the best option, whilst if you live in an urban area with poor air quality a gas-fired system may be the best choice environmentally.

With any type of heating system you can minimise your environmental impact by ensuring your homes is as energy efficient as possible. The Energy Saving Trust can provide advice on how to do this, and on any grants that are available to help you.

## Smoke Control Areas

Local authorities can declare the whole or part of their district to be a Smoke Control Zone under the Clean Air Act 1993. This means that you will be committing an offence unless the fuel you are using is an approved smokeless fuel, or your solid fuel appliance has been tested to ensure it can burn ordinary fuels without creating smoke, known as exempt appliances.

Wood and ordinary bituminous coal are not authorised fuels, and if you intend to burn these fuels you need to ensure that you are using an exempt appliance. Your installer can advise you which appliances are approved as exempt, you can also check against a list of approved appliances. Exempt appliances are normally only approved to burn certain types of fuel, and it is therefore important that you only burn the correct fuel for your appliance.

Information on the location of smoke control areas, approved fuels and a list of exempt appliances is available at [www.uksmokecontrolareas.co.uk](http://www.uksmokecontrolareas.co.uk). If you are in doubt as to whether your property is in a Smoke Controlled Area, contact the Environmental Health Department of your local authority.

## How Can I Minimise Harmful Emissions When Burning Solid Fuel?

To reduce the amount of pollutants produced from burning solid fuel, make sure you maintain your appliance adequately and ensure fuel is clean and dry. Burning of wet fuel, such as unseasoned wood, will mean that the fuel will burn at a lower temperature and will result in higher levels of emissions, including dioxins, furans, carbon monoxide, carbon dioxide, particles, and nitrogen oxides. Burning contaminated fuel, such as painted or preserved wood, will also lead to higher emissions.

### Carbon Monoxide

Carbon monoxide (CO) is a colourless, odourless, poisonous gas produced by the incomplete combustion of carbon-based fuels. More than 50 people are killed by carbon monoxide poisoning each year in England and Wales. Incorrectly installed, poorly maintained or poorly ventilated cooking and heating devices are often the main sources. Carbon monoxide poisoning can kill quickly without warning; it can also resemble food poisoning, viral infections, flu or simple tiredness, e.g. headaches, tiredness, feeling sick and difficulty thinking clearly. If you suffer from these symptoms, and they could be caused by carbon monoxide exposure, stop using ALL your cooking and heating appliances and seek urgent medical attention. Call a suitably qualified engineer to check your appliances.

To prevent carbon monoxide poisoning:

- Have all cooking and heating appliances installed and serviced regularly by trained, reputable, registered engineers e.g The Gas Register, formerly CORGI, (for gas appliances), HETAS (for coal fuelled appliances), OFTEC (for oil appliances) – DO NOT attempt to install or service the appliance yourself!
- DO NOT use poorly maintained appliances and make sure chimneys and flues are clean and not blocked.
- Make sure that all rooms are well ventilated when an appliance is being used.
- Fit a carbon monoxide alarm that meets European Standard EN 50291 and carries a British or European mark, such as a kite mark. You can be particularly at risk from CO poisoning when you are asleep, because you may not be aware of early symptoms until it is too late. Having an audible CO alarm could wake you and save your life.
- A common situation where carbon monoxide poisoning occurs is when someone who is unfamiliar with solid fuel appliances becomes responsible for the home, for example when an elderly person starts to rely on a carer. In these situations it is vital to tell the newly responsible person about the maintenance procedures for your solid fuel appliance.

## Maintaining Solid Fuel Appliances

The maintenance of solid fuel appliances is very important to ensure safe and efficient operation.

The following general guidelines are recommended but it is important to follow any instructions from your appliance manufacturer:

- Ensure that your chimney is swept from top to bottom at least once a year. If you are responsible for this work then you may find that a member of the National Association of Chimney Sweeps (NACS) will provide a professional service - contact details below.
- Air is vital; make sure you have enough ventilation to keep your fire burning properly.
- Flueways at the back of any boiler should be cleaned at least once a month.
- Throat plates at the top of any room heater should be removed and cleaned regularly.
- Check and empty the ashcan regularly and at least once every day. Do not let the ashcan overflow with ash.
- You should take immediate action if you smell or suspect fumes – open windows and doors immediately and let the fire go out. Do not relight the fire until you have had your chimney and appliance flueways checked by a qualified engineer. A list of HETAS Registered Engineers who specialise in dealing with solid fuel appliances is available from the Solid Fuel Association.

## Buying Solid Fuel

When buying coal look for this logo – The Approved Coal Merchants Scheme. When purchasing solid fuel, the Solid Fuel Association recommends that you always buy from a coal merchant who is a member of the Approved Coal Merchants Scheme. These merchants are fully trained in their trade and are committed to serving the customer. This means that they have agreed to operate and abide by the Coal Trade Code, and will be able to provide information and advice on the correct use of solid fuel.



There is no approved merchant scheme for wood fuels, however the Biomass Energy Centre ([www.biomassenergycentre.org.uk](http://www.biomassenergycentre.org.uk)) carries links to suppliers of wood fuels. If you are installing a

wood burning appliance ask your install to recommend suppliers of suitable fuels. European CEN standards for biomass fuels are currently under development, when finalised these will enable to you to ensure you are using the correct high quality fuel for your appliance.

## Further Information

### **Solid Fuel Association**

Tel: 0845 601 4406

Email: [sfa@solidfuel.co.uk](mailto:sfa@solidfuel.co.uk)

[www.solidfuel.co.uk](http://www.solidfuel.co.uk)

Advice on solid fuel usage and appliances

### **National Association of Chimney Sweeps (NACS)**

Tel: 0800 833464

Email: [nacs@chimneyworks.co.uk](mailto:nacs@chimneyworks.co.uk)

[www.chimneyworks.co.uk](http://www.chimneyworks.co.uk)

List of NACS chimney sweeps

### **Biomass Energy Centre**

Tel: 01420 526197

Email: [Biomass.Centre@forestry.gsi.gov.uk](mailto:Biomass.Centre@forestry.gsi.gov.uk)

[www.biomassenergycentre.org.uk](http://www.biomassenergycentre.org.uk)

A 'one stop shop' to provide information to anyone in the UK with an interest in biomass derived solid, liquid and gaseous fuels and associated conversion technologies.

### **The Energy Saving Trust**

Tel: 0800 512012

[www.energysavingtrust.org.uk/](http://www.energysavingtrust.org.uk/)

A non-profit organisation that provides free impartial advice on home energy efficiency.

We would like to thank our East Midlands Division and the Solid Fuel Association for contributing to this leaflet.



environmental  
protection uk

working for a cleaner, quieter, healthier world

You may also be interested in our leaflets on:

- Air Pollution
- Car Pollution
- Fireworks
- Garden Bonfires

**Environmental Protection UK**

44 Grand Parade

Brighton

BN2 9QA

Email: [admin@environmental-protection.org.uk](mailto:admin@environmental-protection.org.uk)

Tel: 01273 878770

[www.environmental-protection.org.uk](http://www.environmental-protection.org.uk)

Registered Charity 221026

© Environmental Protection UK July 2009